2. (Canceled) The ultrashort pulse generator as claimed in claim 1, further including a mode converter for coupling input light into said optical waveguide.

3. (Amended) The ultrashort pulse generator as claimed in claim ~~2~~1, wherein said mode converter comprises an adiabatically tapered waveguide.

4. (Amended) The ultrashort pulse generator as claimed in claim ~~2~~1, wherein said mode converter comprises a second harmonic generator located within said optical waveguide.

5. The ultrashort pulse generator according to claim 1, wherein said optical waveguide is formed in a substrate comprising a periodically-poled ferroelectric optical material.

6. The ultrashort pulse generator according to claim 5, wherein said periodically-poled ferroelectric optical material is one of: lithium niobate, lithium tantalate, MgO:LiNbO3, KTP and crystals of the KTP isomorph family.

7. The ultrashort pulse generator according to claim 1, wherein said wavelength conversion channel converts the wavelength of said ultrashort optical pulses as a function of at least one of: a temperature of the wavelength conversion channel; a wavelength of light pumped

into said wavelength conversion channel; and a periodic-poling period of an electric field in said wavelength conversion channel.

8. The ultrashort pulse generator according to claim 1, wherein said ultrashort optical pulse source is a mode-locked fiber laser.

9. The ultrashort pulse generator according to claim 8, wherein said mode-locked fiber laser is an erbium-doped fiber laser.

10. The ultrashort pulse generator according to claim 1, wherein said ultrashort optical pulse source is one of: a Ti:sapphire laser, a Cr:Forsterite laser, a Cr:LiSaF laser and a Cr:LiSGaF laser.

11. The ultrashort pulse generator according to claim 1, wherein said wavelength conversion channel further comprises at least one harmonic generator for generating ultrashort optical pulses whose wavelength is shorter than the wavelength of the ultrashort optical pulses generated by said ultrashort optical pulse source.

12. The ultrashort pulse generator according to claim 1, further comprising an ultrashort-pulse amplifier upstream of said wavelength conversion channel for amplifying said ultrashort optical pulses.

13. The ultrashort pulse generator according to claim 12, wherein said ultrashort-pulse amplifier is an erbium fiber amplifier.

14. In combination:

a color image generating device; and

an ultrashort pulse generator for supplying image data to said color image generating device in the form of red, green and blue ultrashort optical pulses, said ultrashort pulse generator comprising: an ultrashort optical pulse source generating ultrashort optical pulses; a first wavelength conversion channel for converting a wavelength of said ultrashort optical pulses to produce red ultrashort optical pulses; a second wavelength conversion channel for converting the wavelength of said ultrashort optical pulses to produce blue ultrashort optical pulses; a third wavelength conversion channel for converting the wavelength of said ultrashort optical pulses to produce green ultrashort optical pulses.

15. The combination according to claim 14, wherein said first wavelength conversion channel includes an optical parametric generation portion which parametrically generates the red

ultrashort optical pulses, said second wavelength conversion channel includes an optical parametric generation portion which parametrically generates the blue ultrashort optical pulses, and said third wavelength conversion channel includes an optical parametric generation portion which parametrically generates the green ultrashort optical pulses.

16. The combination according to claim 14, wherein each of said first, second and third wavelength conversion channels comprises a waveguide formed in a substrate comprising a periodically-poled ferroelectric optical material.

17. The combination according to claim 16, wherein said periodically-poled ferroelectric optical material is one of: lithium niobate, lithium tantalate, MgO:LiNbO3, and KTP and crystals of the KTP isomorph family.

18. The combination according to claim 14, wherein said ultrashort optical pulse source is a mode-locked laser.

19. The combination according to claim 14, wherein said ultrashort optical pulse source is one of: a Ti:sapphire laser, a Cr:Forsterite laser, a Cr:LiSaF laser and a Cr:LiSGaF laser.

20. (Previously amended) The combination according to claim 14, wherein said ultrashort optical pulse source is a mode-locked fiber laser.

21. (Previously amended) The combination according to claim 20, wherein said mode-locked fiber laser is an erbium-doped fiber laser.

22. In combination:

a color image generating device; and

an ultrashort pulse generator for supplying image data to said color image generating device in the form of red, green and blue ultrashort optical pulses, said ultrashort pulse generator comprising: an ultrashort optical pulse source generating ultrashort optical pulses; an optical pump for generating pump pulses at a pump wavelength; and an optical waveguide for converting a wavelength of said ultrashort optical pulses to red, green and blue wavelengths, said optical waveguide including: a first harmonic generation section responsive to said ultrashort optical pulses, for generating harmonic ultrashort optical pulses at a harmonic wavelength; an optical parametric generation section responsive to the harmonic ultrashort optical pulses and the pump pulses, for parametrically generating signal ultrashort optical pulses at a signal wavelength and idler ultrashort optical pulses at an idler wavelength; a second harmonic generation section responsive to the signal ultrashort optical pulses, for generating the blue ultrashort optical pulses; and a third harmonic generation section responsive to said idler

ultrashort optical pulses, for generating the red ultrashort optical pulses, said optical waveguide transmitting the green ultrashort optical pulses at said pump wavelength.

23. The combination according to claim 22, wherein said optical waveguide is formed in a substrate comprising a periodically-poled ferroelectric optical material.

24. The combination according to claim 23, wherein said periodically-poled ferroelectric optical material is one of: lithium niobate, lithium tantalate, MgO:LiNbO3, and KTP and crystals of the KTP isomorph family.

25. The combination according to claim 22, wherein said ultrashort optical pulse source is a mode-locked laser.

26. The combination according to claim 22, wherein said ultrashort optical pulse source is one of: a Ti:sapphire laser, a Cr:Forsterite laser, a Cr:LiSaF laser and a Cr:LiSGaF laser.

27. (Previously amended) The combination according to claim 22, wherein said ultrashort optical pulse source is a mode-locked fiber laser.

28. (Previously amended) The combination according to claim 22, wherein said mode-locked fiber laser is an erbium-doped fiber laser.

29. An optical device, comprising;

an ultrashort-optical pulse source generating ultrashort optical pulses;

a wavelength conversion channel for converting a wavelength of said ultrashort optical pulses to a different wavelength, said conversion channel comprising an optical parametric generation portion having an optical parametric generation threshold energy in the picojoule regime for an ultrashort optical pulse duration in the low picosecond regime.

30. An optical device, comprising;

an ultrashort-optical pulse source generating ultrashort optical pulses; and

wavelength conversion device comprised of an optical parametric generation portion having an optical parametric generation threshold energy level of less than one nanojoule.--

31. An optical wavelength conversion apparatus, comprising:

an optical pulse source generating optical pulses; and

a wavelength conversion channel for converting a wavelength of said optical pulses to a different wavelength, comprising an optical waveguide including an optical

parametric generation portion for parametrically generating said optical pulses at said different wavelength.

32. An optical wavelength conversion apparatus, comprising:

A single laser source for generating optical pulses; and

a wavelength conversion channel for converting a wavelength of said optical pulses to a different wavelength, comprising an optical waveguide including an optical parametric generation portion for parametrically generating said optical pulses at said different wavelength.

33. (Amended) An optical wavelength conversion waveguide device, comprising:

an input end for receiving an optical signal at a first wavelength;

an optical parametric generator portion for parametrically generating an optical output at a second wavelength differing from said first wavelength; and

a mode converter for coupling said optical signal into said input end,

at least said optical parametric generator portion being comprised of a nonlinear medium.

34. (Canceled) An optical wavelength conversion waveguide device as claimed in claim 33, further including a mode converter for coupling said optical signal into said input end.